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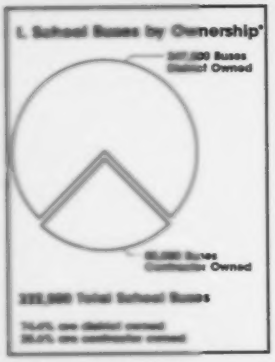

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Industry Statistics

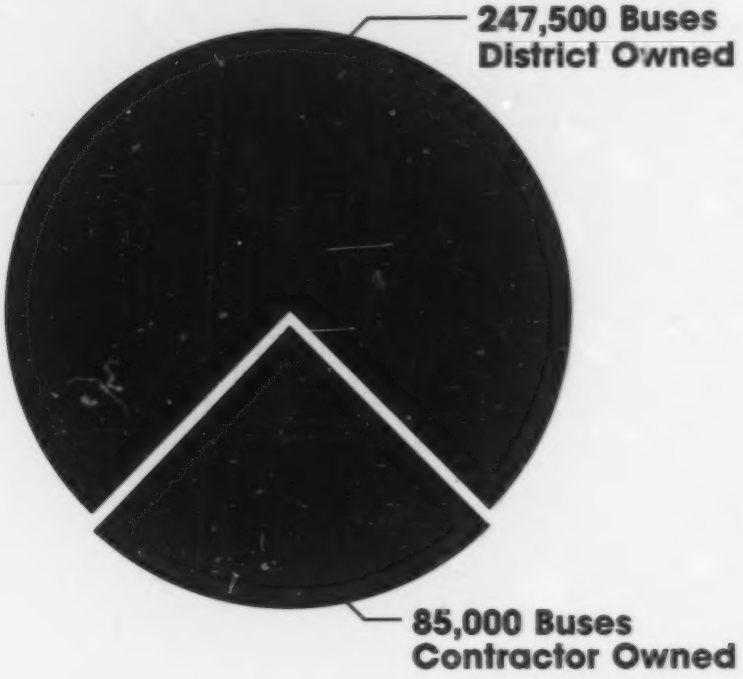
School Transportation in 1982-83

Based on reports from State Departments of Education. Prepared by The National Association State Directors of Pupil Transportation Services and Bobit Publishing Research Dept.

State	Pupils Transported at Public Expense	Type Type I	Type II	Ownership Public Operated	Contractor Operated	Total Number of Buses	Transportation Expenditures Including Capital Outlay
Alabama	457,573	6,446	175	6,393	228	6,621	$ 53,691,118
Alaska	40,450	463	114	177	460	57	20,158,118
Arizona	183,243	2,925	344	3,269	68	3,337	46,448,478
Arkansas	262,148	3,969	122	4,091		4,091	44,250,331
California	867,549	12,255	5,305	11,783	5,777	17,560	352,755,788
Colorado	221,155	3,611	222	3,604	229	3,833	52,403,146
Connecticut	Unknown	3,822	672	268	4,226	4,494	83,467,351
Delaware	83,775	1,241	33	376	898	1,274	23,715,703
Dist. of Col.	2,600	158	N/A	158	N/A	158	Unavailable
Florida	933,025	N/A	N/A	6,973	542	7,515	149,119,675
Georgia	809,000	N/A	N/A	8,800	266	9,066	110,000,000
Hawaii	39,613	504	216	18	702	720	14,196,000
Idaho	118,960	1,804	200	1,343	661	2,004	22,275,585
Illinois	1,000,957	N/A	N/A	7,778	6,013	13,791	152,912,642
Indiana	675,349	N/A	N/A	N/A	N/A	10,000	124,975,400
Iowa	256,243	6,081	684	6,554	211	6,765	59,589,995
Kansas	159,425	4,388	526	3,737	1,177	4,914	44,739,187
Kentucky	461,200	6,999	392	7,144	247	7,391	91,678,549
Louisiana	609,358	7,201	272	3,348	4,125	7,473	110,424,535[1]
Maine	165,798	1,989	238	1,819	408	2,227	34,281,334
Maryland	447,048	4,680	170	2,271	2,579	4,850	109,988,406
Massachusetts	591,349[2]	5,582	562	1,729	4,415	6,144	128,222,653
Michigan	985,559	11,817	1,851	13,668		13,668	200,000,000[1]
Minnesota	790,337	8,247	1,435	4,579	5,103	9,682	139,199,759
Mississippi	361,261	5,046	372	5,200	218	5,418	54,974,926
Missouri	455,954	N/A	N/A	5,902	3,340	9,242	72,890,502
Montana	56,920	N/A	N/A	683	602	1,285	5,205,878
Nebraska	57,417	2,280	856	N/A	N/A	3,136	31,464,330
Nevada	53,442	804	54	858		858	Unavailable
New Hampshire	92,612	1,476	307	266	1,517	1,783	13,358,069
New Jersey	643,026	7,854	4,533	5,176	7,211	12,387	Unavailable
New Mexico	130,030[2]	1,634	362	532	1,464	1,996	38,975,126
New York	1,977,152	16,812	8,187	12,859	12,140	24,999	638,520,561
North Carolina	733,591	12,759	0	12,759		12,759	89,031,307
North Dakota	48,051	1,278	169	1,104	343	1,447	22,736,548
Ohio	1,310,127	14,120	380	13,968	432	14,400	234,306,172
Oklahoma	288,058	6,105	60	6,047	118	6,165	73,124,760
Oregon	236,688	3,817	325	2,917	1,225	4,142	65,997,463
Pennsylvania	1,432,294	13,866	1,352	5,316	9,902	15,218	Unavailable
Rhode Island	102,151	N/A	N/A		1,316	1,316	Unavailable
South Carolina	407,411[2]	6,013	895	6,570	338	6,908	42,219,238
South Dakota	30,658	1,093	109	798	404	1,202	15,803,218
Tennessee	569,900	5,998	366	5,001	1,363	6,364	74,554,158
Texas	925,469	18,236	694	18,901	29	18,930	245,904,358
Utah	118,615	1,270	158	1,364	64	1,428	17,529,720
Vermont	71,748	998	195	655	538	1,193	14,913,368
Virginia	726,137	10,269	354	10,395	228	10,623	111,698,325
Washington	379,868	236	5,683	5,286	633	5,919	63,539,040
West Virginia	289,474	N/A	N/A	3,491	59	3,550	69,115,110[1]
Wisconsin	467,046	6,858	N/A	1,989	4,869	6,858	111,975,171
Wyoming	42,506	1,228	131	1,309	50	1,359	23,551,038
Manitoba	56,251	1,613	231	1,552	292	1,844	27,576,529
Guam	31,000	188	N/A	188	N/A	188	4,300,000
Puerto Rico	166,304	562	805	675	692	1,367	15,833,837
Saipan	1,320	13	1	14		14	243,000
TOTALS	**20,952,506**	**208,853**	**50,556**	**224,106**	**76,980**	**332,453**	**$3,565,046,073**

[1] Does not include capital outlay.
[2] 1981-1982 Data.

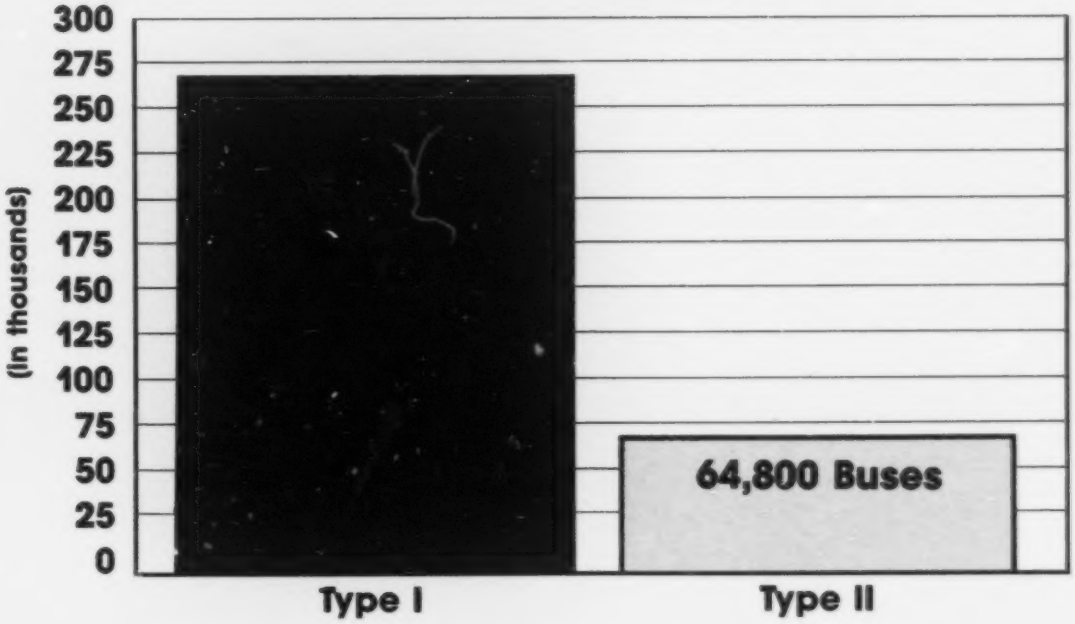
I. School Buses by Ownership*



332,500 Total School Buses

74.4% are district owned
25.6% are contractor owned

II. School Buses by Type*



All figures adjusted to include non-designated vehicles (listed as N/A in State Director report).

Accidents By State

State	Vehicles	Annual Bus Mileage (000)	Pupils Transp. Daily	Type of School Bus Accident				Prop. Damage Only Acc.	Persons Injured	
				Total[a]	Other Veh.	Non-coll.	Fixed Obj.		Total	Pupils
U.S.				**48,000**	**38,000**	**1,500**	**2,400**	**46,000**	**6,000**	**3,300**
Alabama	6,621	53,045	457,573	400	...	...	...	344	...	...
Alaska	580	7,000	38,000	102	85	1	15	86	33	...
Arizona	3,269	27,947	197,246	166	141	4	3	118	94	32
Arkansas	4,082	34,148	265,808	246	90	1	0	213	68	67
California	17,560	247,638	867,449	1,477	1,065	4	97	1,179	602	286
Colorado	5,013	40,394	221,155	126	...	...	...	...	32	29
Connecticut	4,594	...	...	821	776	1	37	736	135	49
Delaware	1,255	15,366	77,790	96	73	1	10	82	21	14
Dist. of Col.	158	175	4,000	58	...	...	...	...	7	2
Florida	7,531	130,075	779,008	652	484	1	6	620	53	18
Georgia	10,000	92,500	785,216	...	...	...	...	...	268	207
Hawaii	...	...	...	...	...	...	...	...	...	...
Idaho	2,004	17,641	118,960	78	70	4	0	26	52	44
Illinois	14,758	169,874	887,174	2,087	1,996	16	35	1,704	721	337
Indiana	10,143	59,355	675,349	527	...	...	...	...	172	60
Iowa	6,765	62,475	256,243	439	313	15	95	352	84	36
Kansas	4,914	50,000	159,425	262	229	10	12	193	112	22
Kentucky	...	70,495	461,167	838	718	5	43	695	234	130
Louisiana	7,473	66,381	580,246	755	703	20	19	723	37	21
Maine	2,241	25,859	165,798	135	119	1	13	107	47	17
Maryland	4,850	71,921	447,084	977	847	0	84	...	80	17
Massachusetts	7,281	60,473	491,755	1,059	...	...	...	...	320	212
Michigan	...	116,000	...	1,356	1,239	11	45	1,028	336	96
Minnesota	9,923	90,170	709,337	694	591	1	22	525	...	...
Mississippi	5,418	41,082	361,261	344	319	4	16	314	89	72
Missouri	8,878	87,432	455,927	446	385	17	26	375	219	171
Montana	1,285	16,784	56,920	70	56	3	10	66	4	3
Nebraska	3,444	29,059	57,417	100	...	...	...	...	...	...
Nevada	1,059	11,048	53,033	46	45	0	1	...	...	...
New Hampshire	1,783	11,000	96,000	137	124	0	6	116	48	34
New Jersey	12,600	126,000	645,000	543	468	8	25	273	269	211
New Mexico	1,996	22,465	130,030	174	156	3	8	148	39	18
New York	26,015	155,835	1,889,583	526	416	24	15	314	367	258
North Carolina	12,759	109,251	725,521	1,079	848	122	4	760	547	482
North Dakota	2,110	25,283	48,051	46	37	4	2	37	27	22
Ohio	14,406	149,845	1,310,127	1,343	...	...	...	989	350	350
Oklahoma	6,159	58,439	288,058	413	362	3	23	311	102	59
Oregon	4,142	40,159	236,688	350	288	3	54	329	39	21
Pennsylvania	17,998	19,885	1,432,294	1,661	1,435	31	154	...	323	110
Rhode Island	1,316	14,940	102,151	115	110	0	4	101	14	10
South Carolina	6,018	59,575	437,971	738	646	44	19	715	413	349
South Dakota	798	17,503	30,658	70	55	3	6	61	46	45
Tennessee	6,364	59,985	569,900	657	619	18	103	556	123	106
Texas	27,235	157,759	925,469	1,261	1,116	5	28	943	1,165	538
Utah	1,406	14,952	118,615	66	52	0	8	62	3	3
Vermont	1,246	11,414	72,581	63	...	...	...	57	...	...
Virginia	9,107	79,265	722,666	680	599	2	54	562	199	108
Washington	6,286	63,025	350,000	256	240	0	10	169	166	57
West Virginia	2,924	37,269	289,474	606	489	2	115	591	31	23
Wisconsin	6,858	75,234	467,046	539	430	5	1	413	194	15
Wyoming	1,359	16,712	42,506	37	33	0	4	34	3	0

Source: State departments of education and state traffic authorities. Most reports cover 1982-1983 school year or 1983 calendar year. U.S. totals are National Safety Council estimates for the calendar year 1983.
[a]Totals include additional accident types not shown separately.
[b]Based on Federal Highway Administration estimates.

Growth Of School Transportation In The United States

		Number of Pupils Transported	Number of Vehicles Used	Pupils Per Vehicle	Expenditure*	Expenditure Per Pupil
National Association of State Directors of Pupil Transportation Services	1982-83	19,823,716	300,094	66.0	$3,565,046,073	$179.83
	1981-82	22,836,272	335,160	68.1	4,821,783,550	211.10
	1980-81	22,598,975	334,461	67.6	4,125,443,607	182.50
	1979-80	22,578,280	329,808	68.5	3,894,893,829	172.50
	1978-79	22,882,191	323,333	70.8	3,341,035,199	146.01
	1977-78	21,923,780	315,489	69.5	2,880,513,030	131.39
	1976-77	23,156,006	298,173	77.7	2,666,446,831	115.15
	1975-76	22,757,316	312,030	72.9	2,285,840,977	100.44
	1974-75	22,398,556	282,834	79.2	2,000,991,592	89.33
	1973-74	21,169,633	271,552	77.9	1,537,148,313	72.61
	1972-73	20,791,737	262,579	79.2	1,407,472,462	67.62
	1971-72	20,047,589	257,804	77.8	1,324,740,407	66.02
	1970-71	19,191,483	245,608	78.1	1,178,910,190	61.82
	1969-70	18,752,735	239,973	78.1	966,135,767	51.51
National Education Association	1968-69	18,467,944	238,102	77.6	901,353,107	48.80
	1967-68	17,271,718	230,578	74.9	822,595,699	47.62
	1966-67	16,684,922	221,722	75.3	763,600,617	45.76
	1965-66	16,423,396	210,692	77.9	696,325,421	42.40
U.S. Office of Education	1964-65	15,413,000	206,000	74.8	642,627,000	41.69
	1963-64	15,559,524	200,116	77.7	612,310,333	39.35
	1962-63	14,247,753	195,397	72.9	578,017,634	40.57
	1961-62	13,687,547	191,160	71.6	540,168,114	39.46
	1960-61	13,106,779	185,869	70.5	505,754,515	38.59

*Five states did not report data; data from three states based on 1981-82 figures. Expenditures include purchase of equipment and tools, salaries, maintenance, supplies and fixed charges, such as licenses, drivers' physical examinations, insurance, etc.

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school bus fleet

1985 State Safety Report

Why Laidlaw Acquired ARA

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Photo of Carpenter's Clipper by Brewer, Jones & Feldman, Inc.

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SBF Survey Looks At The Danger Zone

More than a decade after NHTSA proposed safety standards, the nation's State Directors of Pupil transportation report that progress is being made implementing Standard 17.

Driver training is not required for school bus drivers in 10 states, according to a recent survey by SCHOOL BUS FLEET magazine. Within these 10 states there are 49,193 Type I and Type II school buses daily carrying 2,897,925 school children. This finding comes despite the fact that federal Standard 17 — which encouraged states to adopt mandatory driver training along with other safety programs — was issued by the National Highway Traffic Safety Administration (NHTSA) 12 years ago this month.

The State Director's Survey reported here was conducted by the editors of SCHOOL BUS FLEET early in December 1984. Survey forms were sent to all 50 State Directors of Pupil Transportation. A second mailing was sent to directors who failed to reply by the pre-Christmas deadline. Altogether 47 directors, representing 47 states, eventually submitted data.

The objective of the survey was to examine the safety practices, state laws, and regulations that have direct bearing on school bus loading and unloading procedures.

The death zone

It's well known among pupil transportation experts that injuries and fatalities in the so-called death or danger zone — that area immediately to the front, sides, and rear of a stopped school bus — now represents a greater hazard to the safety of school children than fatalities caused by passing vehicles or occurring inside the school bus as a result of a vehicular accident. However that pattern has not always been thus.

According to the annual Kansas DOT Loading and Unloading Survey, vehicles passing stopped school buses killed 45 youngsters in 1970; that figure declined through the decade, reaching seven fatalities by 1980, though it has grown some since then.

For the 1982-83 school year K-DOT reported that 17 youngsters were fatally injured by a school bus while in the death zone; that figure also declined more than half from an alarmingly high 38 fatalities in 1973.

Meanwhile the National Safety Council's last Accident Facts study reported that 20 percent of all school bus fatalities in 1983 occurred *inside the school bus*, while the remainder occurred a pedestrian fatalities *outside the bus*. This is less than half the rate reported in 1974, for instance, in which 39 percent of all school bus fatalities occurred inside the school bus. Most industry experts cite NHTSA's 1978 regulation requiring high-back seats and compartmentalization as the most important factors contributing to the sharp decline.

K-DOT and NSC unfortunately use different methodologies and different definitions, so a precise comparison between the two reports cannot be made. Nevertheless the pattern now clearly reveals that the greatest danger to the children does not stem from accidents while the children are inside the school bus, nor for that matter from passing motorists. Great strides have been made in the last decade-and-a-half to reduce these kinds of school bus fatalities. The greater risk now is what happens as children board and exit the school bus.

SCHOOL BUS FLEET magazine surveyed State Directors of Pupil Transportation in an effort to learn what progress was being made to improve safety in the danger zone.

During the past year the debate over whether seat belts ought to be mandatory in Type I school buses dominated most discussions about pupil transportation safety. The editors of this magazine came to the conclusion that the seat belt debate

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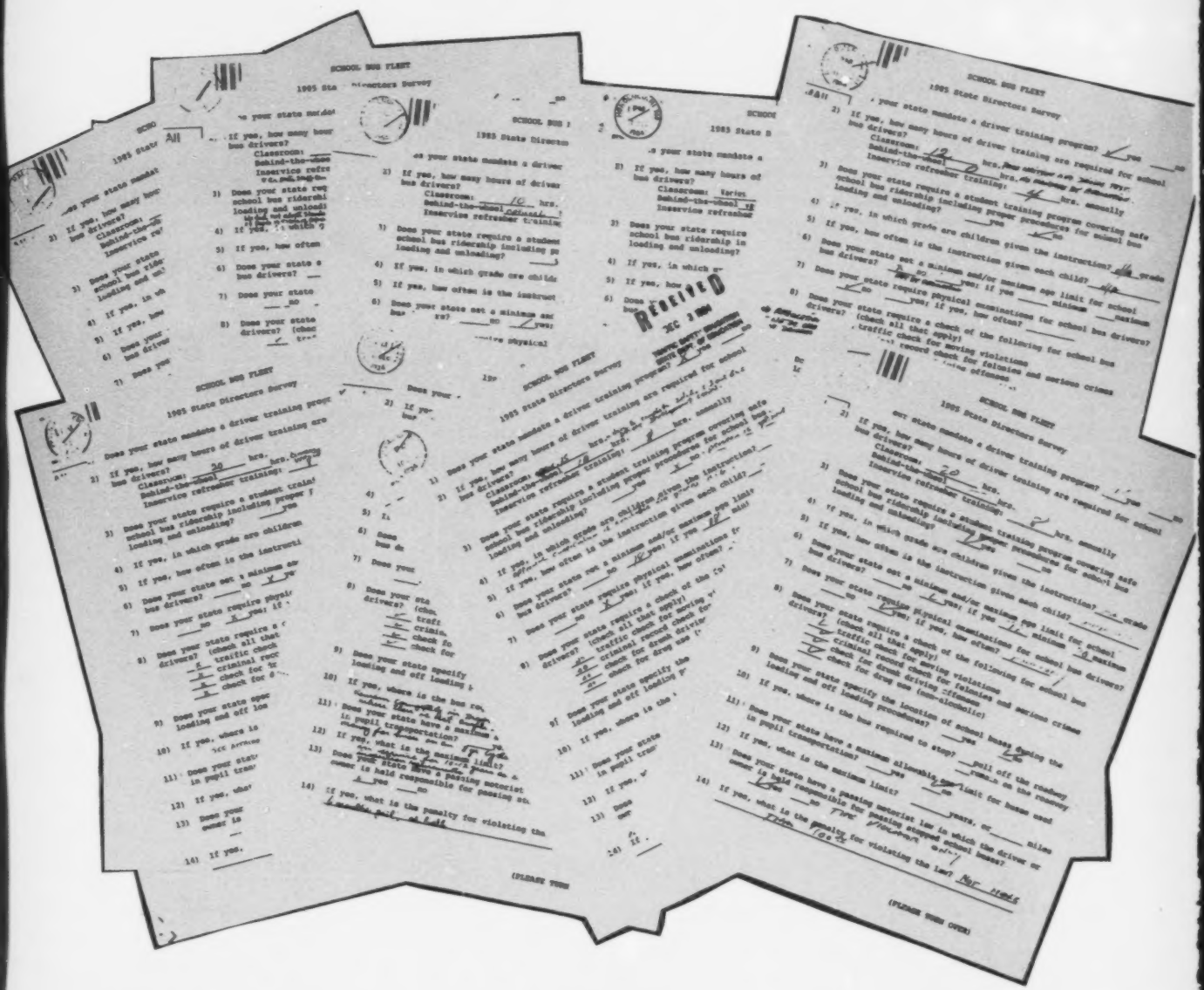
— while vitally important and potentially significant in the fight for improved safety — shouldered aside discussion and action on a host of other safety proposals. The SBF State Director's Survey examines what's occurring with regard to some of the Standard 17-type concepts such as better driver training, passing motorist laws, whether states have mandated some of the many safety equipment devices that are available from industry suppliers, etc. Survey results disclose an absence of uniformity among the states on Standard 17 proposals.



A wide disparity

For example, of the 37 states which mandate training for school bus drivers, classroom instruction averages 14.4 hours, behind the wheel training 5.1 hours, and annual in-service training of 7.7 hours. However the amount of training varies widely. West Virginia requires 30 hours of classroom training while nearby Maryland only required six; California required 20 hours of behind the wheel, while Connecticut only requires four.

Annual physical examinations of school bus drivers are required in 30 states and bi-annual exams in 11 others. Three states don't require any physical examination at all; one only requires an exam once every three years, while another only once every five years. Two states reported they increase the frequency of examinations to bi-annual once the drivers reach 50 years of age.

Responsibility for safe behavior in the death zone doesn't rest solely with the school bus driver however. Thus it is somewhat ironic that only 20 states require student training covering safe school bus ridership, including proper procedures for school bus loading and unloading; of these, only 15 require training twice yearly. Meanwhile, 24 states don't require any student training at all.

continued

Passing motorist laws

Although the incidence of fatalities caused by passing automobiles and trucks has declined markedly, one of the hottest topics throughout pupil transportation these days is what to do about motorists who ignore stopped school buses. We asked a series of questions relating to this issue.

Forty-one states report they have passing motorist laws on their books in which driver or owner is held responsible for passing stopped school buses. Of these, 15 report their state will accept reporting the license plate number of the offending vehicles, while 27 others require positive identification of the automobile driver. Six state directors say passing motorist legislation is pending.

A follow-up question about the effectiveness of enforcement if the passing motorist law brought these responses: three state directors described enforcement as "vigorous;" 16 said enforcement was "moderate but adequate," while 19 state directors checked "inadequate" to describe enforcement of the law by the judicial system in their state.

A further query about the actual number of convictions for violations of the passing motorist law in 1985 year-to-date only saw four state directors supply information for their state! These four states — Connecticut, Indiana, New Jersey, and Utah — averaged 1,395 convictions each, with Utah alone reporting 3,082 convictions.

Meanwhile state directors in nearly four-fifths of the states, representing fully 79 percent of all buses in the nation's school bus fleet, were unable even to answer the question! Here is how this came about: respondents were instructed to enter "not available" if their state had a passing motorist law *but data about the number of violations was not collected.* Altogether 39 state directors entered N/A. Clearly, the lack of response to this question indicates the judicial reporting procedures in these 39 states needs to be strengthened; state directors of pupil transportation ought to have access to this vital data.

To gain an idea of the manpower resources that state governments commit to pupil transportation, we asked directors to list the number of personnel employed in their office or department. After all, one of the key measurements in primary and secondary education is the ratio of pupils to teachers. We wanted to learn how many individuals — including the state director, driver training instructors, inspectors, and other administrative personnel — were employed reporting, testing, and enforcing the various requirements related to pupil transportation.

The answer on the average was 12.4 employees. Fully three-quarters of the states employ 10 or less people in pupil transportation! Based on the aggregate total of individual employees among the 46 reporting states, this computes to something like one state pupil transportation worker for every 36,800 school children.

Conclusion

What emerges from this study is clear. Adoption of the various provisions of Standard 17 is spotty. Certain of the provisions, such as the four light and eight light system and stop arms, are in widespread use, others widely ignored.

In spite of the uneven record, what's heartening is the dramatic decline in the number of pupil transportation fatalities among school age population. The NSC ranks school buses as the safest mode of transportation; only 0.02 deaths per 100 million passenger miles occurred during 1980-82.

Moreover, the fact that several safety related types of equipment were reported not to be mandatory suggests that safety in the death zone could improve sharply in a brief span merely by implementing some of these devices. The following article describes some of these technologies. Great strides have been made. Much remains to be done.

School Bus Safety Equipment Usage

	mandatory	not mandatory	optional	legislation pending
• 4 light system	13	27	0	0
• 8 light system	36	8	0	0
• stop arms	23	8	8	3
• swing-out crossing controls	5	21	18	1
• back up alarm system	6	19	18	1
• outside p.a. system	1	16	28	1
• strobe lights anywhere on bus	2	14	26	3
• two way radios	3	8	33	2
• convex side mirrors	25	3	14	1

Summary table shows the status of current legislation regarding safety equipment in each state.

School Bus Maintenance Practice Surveyed

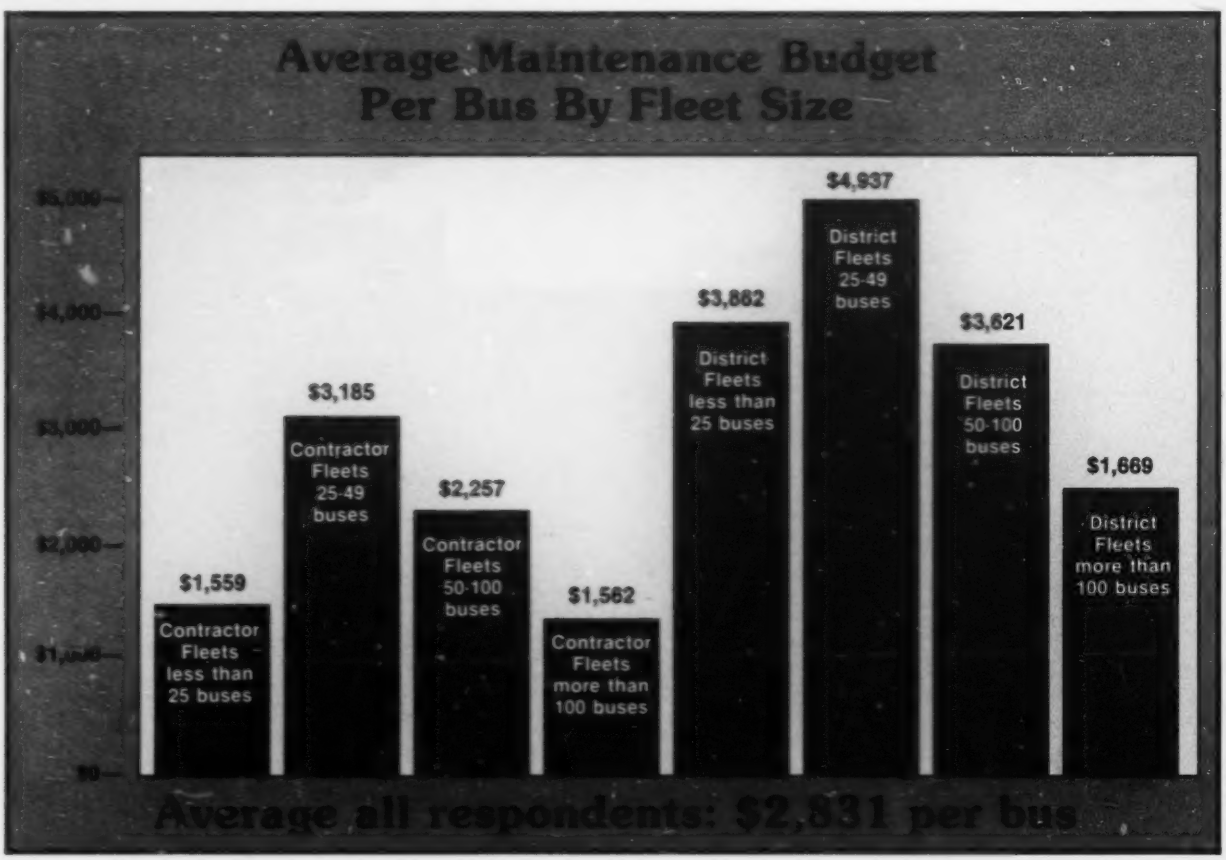
SCHOOL BUS FLEET finds a curious gap in maintenance costs between large and small fleets, and between contractors and school district operations.

The recent school bus maintenance survey conducted by SCHOOL BUS FLEET Magazine demonstrates the wide disparity of operating expenditures reported by maintenance managers. Despite similarities in procedures among those fleets reporting, cost results varied widely among every category of school bus operation.

The survey was conducted by editors of SCHOOL BUS FLEET last December. Survey questionnaires were mailed to 500 fleet managers throughout the U.S. Canadian contractors and districts were not surveyed.

Two-hundred-seven responses were returned, representing 7,918 contractor- and district-owned, Type 1 and Type 2 school buses. Survey responses, therefore, represented 41 percent of the number mailed to our readership. Despite the bus sample size the quality of responses were broad and varied; survey forms indicate a broad geographic representation. Operations with only three buses in their fleets responded as well as those with more than 2,000 buses.

The questionnaire was not designed to elicit information regarding practices and procedures on the shop floor. Instead we sought information that would reflect industry-wide maintenance policies. Hopefully the data will give the school bus industry greater insight and better



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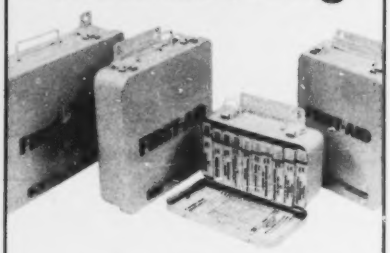

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information about the maintenance function.

The questions

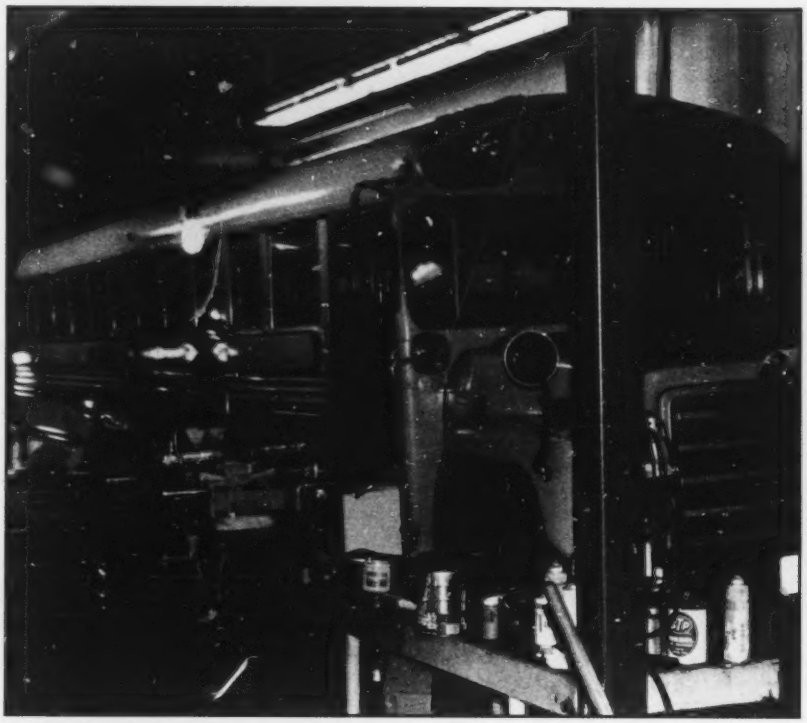
Maintenance officials were asked to supply the number of buses in their fleet by two types: those over 10,000 GVWR and under-10,000 GVWR school buses. We also asked average fleet age. We did not ask brand or model information however, nor what options with which vehicles were equipped. Readers should keep in mind that while these factors might have influenced individual responses, the survey only gathered aggregate data.

For purposes of comparison responses were divided by size and mix of fleet into eight categories. The categories are: district-owned fleets of less than 25 buses, those operating between 25 and 49 units, those comprised of between 50 to 99 vehicles, those district fleets of more than 100 vehicles, and contractor-owned operations categorized by the same four fleet sizes.

Maintenance budgets

Among respondents reporting budgets (see page 51) the average sum spent annually on maintenance per bus varied between contractor and school-owned fleets. The average sum spent per annum by contractors is $2,108, but the average for school districts is $3,522. This average was derived by dividing the total maintenance budgets reported (labor, parts, etc.) by the number of buses the districts and contractors reporting operate.

As noted earlier the most surprising aspect of the returns was the reported disparities. For example, small contractor fleets of 24 buses or less reported spending an average of $1,559 per bus annually on maintenance, while contractor fleets of 25 to 49 units reported $3,185 per bus.



A wide gap was found in square footage of maintenance space per bus between large and small fleets.

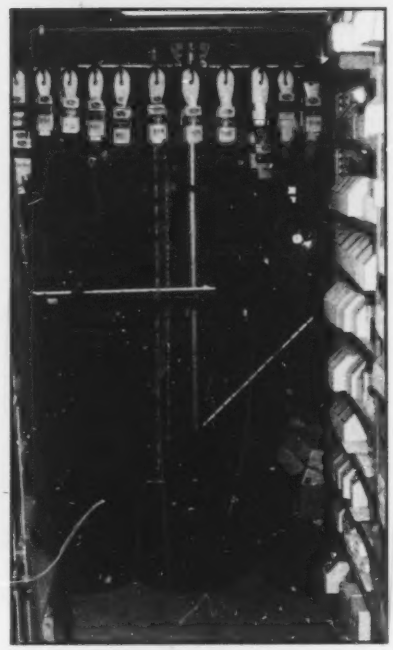
Yet contractors with 50 to 100 vehicles reported spending an average of $2,256 on maintenance per bus and contractor fleets larger than 100 units said that they spent $1,433 per bus. One plausible explanation is that as fleets become larger, contractors become more efficient and thus control their costs better.

The same pattern held true for the district-owned categories. For

fleets smaller than 25 units, the average maintenance expenditure per bus was reported to be $3,862; for operations of 25 to 49 vehicles, it was $4,937; for fleets of 50 to 100 buses, it was $3,621; and for fleets larger than 100 vehicles, it was $1,669.

It is not clear what accounts for this disparity particularly since these costs vary between fleet and ownership category without pattern. Fleet age has be to ruled out since the variance in average age of buses for each survey grouping reported is not consistent with the differences in maintenance per-bus costs. For example, smaller fleets (1-24 units) of contractors and districts averages 7.3 and 6.5 years, respectively.

When asked whether their current maintenance budgets increased or decreased relative to the previous year's budget (irrespective of whether the operation is on a calendar or fiscal year), virtually all respondents in all categories said theirs had increased. Spending rose by the overall industry average of 8.81 percent over expenditures in the previous year. With government-reported inflation of 4.6 percent factored in, contractors anddistricts indicated growth of 4.2 percent in their maintenance budgets.



Survey results revealed that the value of maintenance inventory varied inconsistently with fleet size.

Maintenance inventory

Of respondents that disclosed the dollar value of their maintenance inventory (see page 56), they said that contractors and districts stock an average of $629 worth of inventory per bus.

Again, as witn maintenance budgets, the value of inventory varies widely by fleet size and ownership. For example, district fleets with between 25 and 49 buses reported an average of $965 inventory per bus. Contractor fleets with between 25 and 49 buses, by contrast, reported the smallest average parts stockpile, $656 per vehicle.

In general, the number of mechanics and service personnel in shops rose as fleets got larger and if they were district operated rather than contractor owned. Contractors with fewer than 25 buses reported a curious average of 1.4 per fleet,

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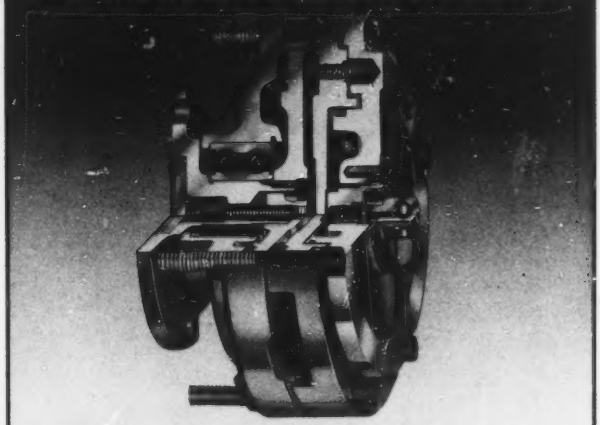

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while districts with more than 100 vehicles said that they employed on average of 34 per fleet, or one for every 19 buses.

Inspection programs

We also asked respondents about the frequency of both their pre-trip checks and their state's inspection rules and whether the inspections were made on the respondents' premises or elsewhere.

The survey found a slightly higher percentage of districts that have monthly state mandated inspections than the percentage of contractors that have a monthly state-mandated checks. Fifty-eight percent of districts said that monthly inspections were the rule; 49 percent of the contractors responding said that the state mandated monthly inspections. The second most common inspection period was quarterly. Thirty-six percent of the contractors said that the state mandated quarterly inspection, while the corresponding percentage for districts was 34.

The frequency of pre-trip inspections was another point treated in the questionnaire. Contractors were equally divided: 50 percent said that they conducted inspections before every run and 50 percent said that they performed checks daily. Of the districts answering the question, 59 percent said that they performed inspections before each trip, while 39 percent said that they made them daily.

"Fifty-seven percent of respondents favored state-mandated mechanic certification."

Specifically, we asked about how brake inspections were conducted. Fully 79 percent of districts responding said that they pulled the wheels for complete internal inspections, while 14 percent said that they examined the inspection plate only. Of the contractors, 74 percent said that they pulled the wheels. The second most frequent answer for the contractors, however, was the examination of both the inspection plate and pulling of the wheels; 20 percent of the contractors said they did both, while seven percent of the districts said they did both.

We asked participants to reveal if they had formalized, written preventative maintenance programs. As the fleets got larger, it is a greater likelihood that they do have PM procedures written out. Overall, 64.4 percent of contractors responding to the question said that they had written procedures, while 58.1 percent of the districts said that they had PM rules written.

Operations which do not have both on-site vehicle washing and fuel facilities comprise a minority, indicated the respondents. Sixty-four percent of managers surveyed said that they had on-site washing facilities and fully 85.9 percent said

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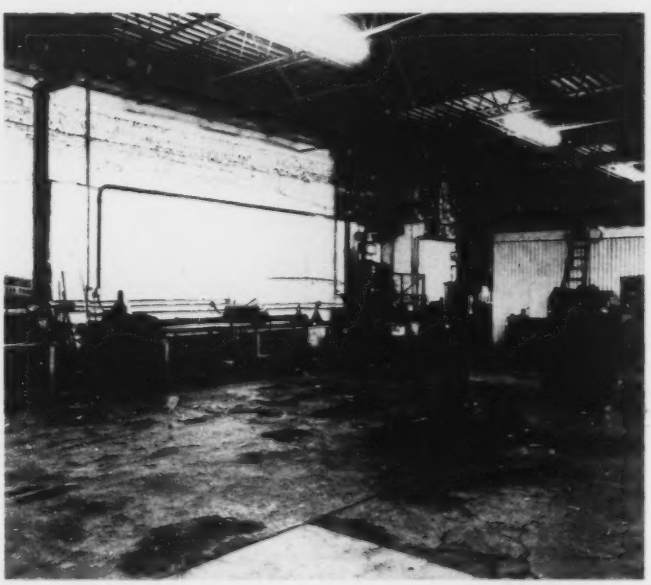

Robert L. Moss
Transportation Supervisor
Walton (N.Y.)
Central School District

Hilly, rural roads in the Catskill Mountain region of New York can be very hard on bus suspension systems, especially in the spring. Just ask Robert Moss. He's been overseeing school transportation in this area for the past 36 years.

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Frustrated with the amount of time, labor and money needed to keep his fleet of 24 buses safely on the road, Moss investigated the MOR/ryde suspension system in 1977. The improvement over the past eight years, he says, has been immeasurable.

"We very seldom buy a spring anymore. Our maintenance time has been cut tremendously. The bus windows, doors and body panels have stopped rattling. And the kids enjoy a safer, smoother ride."

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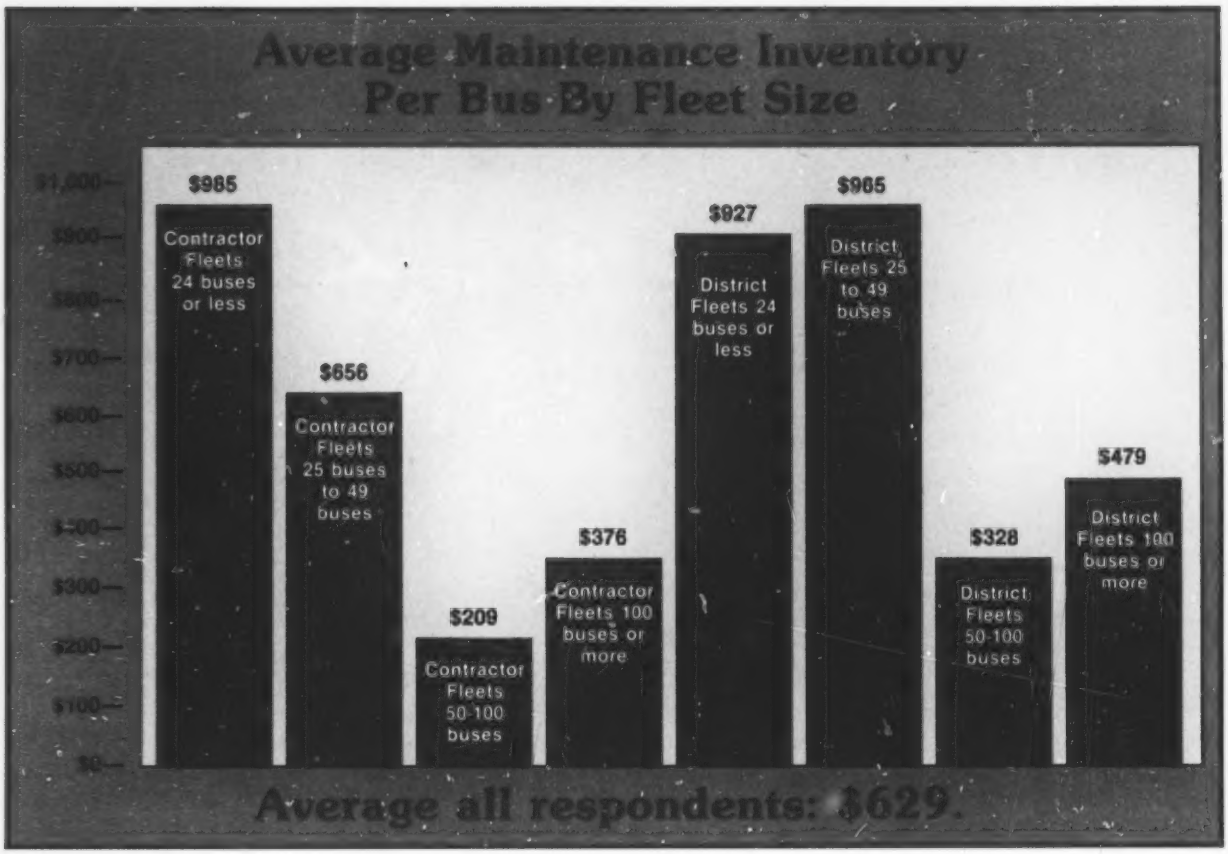

that they had on-site fueling.

Finally, we asked if our sample group thought that the federal government should mandate school bus mechanic training and certification, if the states should do it, or if there should be no requirements. An overwhelming majority — 57.6 percent — of both contractors and district managers felt that the states should mandate mechanic certification. By contrast, 35.8 percent said that the federal government should have mandatory certification, while 6.6 percent said that no government certification should be required.

Conclusions

Throughout the survey the one aspect that surfaced time and again was the wide disparity among size categories of fleets reporting and between school bus contractors and districts. This was a surprising finding. Student transportation is a relatively mature industry, and it is reasonable to expect that some common maintenance experiences would have evolved over the years.

Of course a number of variables mitigate against common answers including factors such as: fleet age; state specs on buses; whether the operation is located in an older, eastern urban center or a newer , more spread-out, western boom town; union versus non-union wage scale; size of fleet; etc. Still, the pattern of disparity shows up across a whole range of responses — budgets, square feet of maintenance space, value of maintenance inventory, and more.

Even taking the variables into account, though, shouldn't their be a greater degree of similarity of expenditures per bus? Take for instance total maintenance budget per bus. According to the data school bus contractors and districts must spend more on maintenance per bus as the fleet gets larger. But this "diseconomy of scale" reverses itself as the fleet grows to beyond 100 buses. Why is it that the "apparently" least effective fleets from a maintenance point of view are the 50-to-100-bus category for contractors and the 25-to-49-bus category for the district fleets?

How about square feet of maintenance space? The average for these same two size fleets was reported to be 278.5 square feet per fleet per bus for the 50-to-100- vehicle contractors versus 808 square feet per bus for the 24-to-49 district fleets. Again, the data leaves few clues to this anomaly.

The pattern of disparity argues forcefully for some uniform implementation by the school bus industry of the federal Standard 17 maintenance procedures, particularly since the federal administration and local taxpayers will likely continue to stress safety and economy. Armed with those procedures the school bus industry will be more effectively able to calculate and then present its case for better maintenance budgets. Moreover, uniformity of maintenance reporting will enable the supplier community to respond to industry needs more effectively.